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ABSTRACT

A study examined the revisions made in expressive and persuasive compositions by 14 good and 14 average writers in grades 5, 7, and 11 to determine if grade- or ability-related differences occurred in the quality and kinds of revisions made and if revisions differed for the two types of compositions. Students wrote compositions one day and revised them a few days later. Revisions were categorized as formal, word level, phrase level, clause level, sentence level, and multisentence level. Results showed no differences in revisions for the two composition types. There was a trend at grade 11, only, for good students to make fewer formal revisions and more revisions of other kinds than average students. There was a significant decrease in formal revisions from grade 5 to grade 11; otherwise, the number of revisions made at the various levels by grade 5 students was very similar to the number made by grade 11 students. Grade 7 students, however, made significantly fewer revisions than did grade 5 or grade 11 students. The findings provide little evidence for age-related or ability-related differences detectable by tallying revisions of the kinds examined. (Author/FL)

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FINAL REPORT

Revision Strategies of Students at Three Grade Levels

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ABSTRACT

This study reports the analysis of revisions made to expressive and persuasive compositions by fourteen good and fourteen average writers at grades 5, 7 and 11. The purpose was to determine whether there were grade-and/or ability-related differences in the quantity and kinds of revisions made and whether there were differences in revisions for the two types of compositions.

Compositions were written one day, and revised a few days later. Revisions were categorized as formal (i.e., spelling, punctuation etc.), word level, phrase level, clause level, sentence level, and multi-sentence level.

There were no differences between composition types. There was a trend at grade 11 only for good students to make fewer formal revisions, and more revisions of other kinds than average students. There was a significant decrease in formal revisions from grade 5 to grade 11; otherwise, the number of revisions made at the various levels by grade 5 students was very similar to the number made by grade 11 students. However, grade 7 made significantly fewer revisions than grade 5 or grade 11.

The study provides little evidence for age-related or ability-related differences which can be detected by tallying revisions of the kinds examined in this study.

REVISION STRATEGIES OF STUDENTS AT THREE GRADE LEVELS

Revising is a critical part of the writing process, especially for experienced writers (Flower and Hayes, 1981; Murray, 1978; Nold, 1981). Murray, on the basis of his own experience, and of his examination of the writing processes of other professional writers, claims that rewriting is the essence of writing for professional writers. They write and rewrite, he says, in order to discover what they have to say. Murray believes that it is rewriting that makes the difference between "the dilettante and the artist, the amateur and the professional, the unpublished and the published" (p. 85). Despite the importance of revising in the composing process of experienced writers, revision is, according to Murray, "one of the writing skills least researched, least examined, least understood and--usually--least taught" (p. 85).

Case studies examining the writing processes of school and college students suggest that student writers do not spontaneously revise to any significant extent. Emig (1971), who studied the writing processes of eight talented twelfth graders, reports that her subjects did little voluntary revision of school-sponsored writing, and no revising at all of the pieces produced specifically for her study. One of her subjects reported that she never rewrote school compositions because rewriting was "punishment work" which had to be done when there

were too many mistakes. Emig's subjects were more inclined to revise self-sponsored writing which tended to engender deep personal involvement. Mischel (1974) reported that the "competent" twelfth grader who was the subject of his study disliked making multiple drafts and did little in the way of correcting, revising, or rewriting. No major reformulations were made by the seventeen college freshmen who were the subjects of Pianko's (1979) study, even though ample time was allowed--time when revising might have been done. Editing played a major role in the composing processes of Perl's (1979) five unskilled college writers, but editing was primarily an exercise in the detection and correction of errors. This error correction occurred throughout the composing process and was so prevalent that it interfered with thinking and writing.

It is suggested that the ability to revise is developmental, and, indeed, that it is a late-developing ability (e.g., Nold, 1981). Bracewell, Scardamalia, and Bereiter (1978) examined the ability of fourth, eighth, and twelfth graders to revise. They found that fourth graders made no significant changes, that eighth graders made changes for the worse, and that twelfth graders made some improvements. In a subsequent experiment in which students in grades 4, 6, and 8 were given some assistance in making revisions, Bereiter and Scardamalia (1982) found that when individual revision changes were considered, changes for the better significantly outnumbered changes for the worse, but when

whole compositions were compared, the revised versions were not preferred to the originals. The National Assessment of Educational Progress (1977) in the United States, examined the revisions made by nine-, thirteen-, and seventeen-year-old students--2,500 at each age level--in a single writing session which allowed fifteen minutes for the first draft and thirteen minutes for revision. Revisions consisted mainly of word substitutions, the addition or deletion of information, and attending to mechanical conventions. The researchers reported a deficiency in the ability of nine- and thirteen-year-olds to revise the overall organization of their papers. Revision did not significantly improve quality ratings. However, it is to be noted that the limited writing exercise gave little opportunity for major revisions.

Bereiter and Scardamalia (1981) examined the ability of thirty students at each of grades 4, 6, and 8 to revise sentences in response to a specific directive selected from a set provided (e.g., "I'd better give an example, "I'd better cross this sentence out and say it a different way"). They found no instance of a child scrapping a sentence and successfully writing one markedly different from the original. A reason they suggest for the difficulty children have accomplishing such recasting of sentences is that they find it hard to deal with the seductive power of their own existing sentences.

Despite the persuasive evidence that revising is a developmental skill which is difficult for children, there are some reports that even very young children can make highly significant, high level revisions once they catch on to what revision is about. Donald Graves (1979) reports that Andrea, a gifted eight-year-old, revised her 500-700 word papers three to five times each, making such major changes as paragraph deletions, reordering sentences and paragraphs, insertions of new information. Crowhurst (1982) reports instances of complex and effective revisions made by seventh graders without any input or assistance from teacher or peers. Bereiter and Scardamalia (1982) suggest the possibility that such cases: are to be explained as individual cases of precocious talent (p.7, footnote).

There are indications that good writers revise in different ways from poor or inexperienced writers. Stallard (1974) compared the writing behaviours of good and average twelfth-grade writers and found that the good writers were more likely to reread their work and revise what they had written. Good writers made significantly more revisions of single words, multiple word units, and paragraphs. Sommers(1980) used the case study approach to examine and compare the revising behaviours of twenty inexperienced writers (college freshmen) and twenty experienced writers (journalists, editors, and academics) writing in expressive, explanatory and persuasive modes. She found

differences between experienced and inexperienced writers both in their understanding of what revision was, and in the kinds of revision strategies used. Her student writers viewed revision as a matter of cleaning up errors and finding the right word. Most of their changes were substitutions and deletions at the word level. Her experienced adult writers, on the other hand, used revising as part of the process of discovering meaning, as a means of finding the form or shape of their argument. Their greatest concentration of changes was at the sentence level. They made revisions which affected the whole composition, but none of her student writers did so.

Bridwell (1980) examined the revisions made to a piece of transactional writing by 100 twelfth-graders. Students' first draft was collected at the end of the period and returned for revision on a later day. Both drafts were rated for quality. Those who revised most extensively were not necessarily better writers, though it was generally true that the least extensively revised papers were poor, short essays with few revisions. The best papers contrasted with the worst in that they made far fewer surface level changes (e.g., spelling, punctuation) and were more inclined to change words in their existing sentences than to add or substitute whole sentences. The poorest writers made a large number of surface and word-level changes in the process of writing their two drafts--as did Perl's (1979) unskilled college writers. It is to be noted, however, that while Bridwell found

some relationship between quality and the kinds of revisions made, there were large individual differences in the kinds and frequencies of revisions.

Faigley and Witte (1981) examined the revisions made to a descriptive essay by six inexperienced college student writers, six advanced college student writers, and six professional adult writers. The most numerous revisions were made by the advanced students; the fewest revisions were made by the inexperienced students; the expert adults fell in between. Most of the revisions of their inexperienced students were surface changes--i.e., mechanics such as spelling, tense agreement et cetera, and minor changes which paraphrased text. Advanced students and adults made many more changes which changed the meaning of the text in either minor or major ways. The inexperienced students made few revisions during the composition of the first draft whereas expert adults and advanced students were much more inclined to do so. The expert writers exhibited great diversity of revision styles, and included among their number one who did almost no revising.

Three categorization schemes which have been used in revision studies are those of Bridwell (1980), Faigley and Witte (1981), and Sommers (1980). Sommers categorized revisions by operation of which there were four--deletion, substitution, addition, and reordering-- and by level--word, phrase, sentence, and theme (the extended statement of one idea). Bridwell

developed a comprehensive scheme for classifying revisions by adapting and refining Sommers' classification. Her scheme had five levels of revisions: surface level (spelling, punctuation, verb form etc.), lexical level, phrase level, clause level, sentence level, multi-sentence level, and text level (including such things as changes in the function category of an essay, or a total re-write with few one-to-one correspondences between sentences). At each level she had several operations (e.g., addition; deletion; expansion of word, phrase or clause; reduction of word, phrase or clause).

Faigley and Witte (1981) adapted Bridwell's system. The main difference between their taxonomy and that of Bridwell is that they categorized changes according to whether or not the change affected the meaning of the text. Changes which did not add new information or remove old information were called surface changes; changes which added new information or removed old information were called text-base changes. Each category was further divided. Surface changes consisted of formal changes (i.e., spelling, punctuation et cetera) Bridwell's surface changes), and meaning-preserving changes, those which paraphrased the concepts in the text but did not alter them. Text-base changes consisted of microstructural changes, involving minor changes in meaning, and macrostructural changes, which involved major changes in meaning or changes in the gist of the text (following the distinction made by Kintsch and van Dijk, 1978).

Revision Classification Scheme

The revision classification scheme used in the present study was, substantially, that used by Bridwell (1980). Though the distinction made by Faigley and Witte (1981), based on whether or not a revision changed meaning, seemed theoretically appealing, a pilot study involving students from grades 7 and 11 suggested: a. that school students make few macrostructural changes; and b. that it was difficult to reliably identify macrostructural changes. It was therefore decided not to use this distinction.

Revisions, then, were classified at seven levels:

1. Formal--spelling, punctuation, paragraphing, abbreviations (i.e., reductions to an abbreviated form or expansions of an abbreviated form), and changes in tense, number or modality which were conditioned by syntax.
2. Word level.
3. Phrase level.
4. Clause level.
5. Sentence level.
6. Multi-sentence level.
7. Text level--involving major changes, as, for example, a total re-write with few or no one-to-one correspondences between sentences.

Each of levels 2 to 6 were subcategorized into the following six operations:

1. Addition.
2. Deletion.
3. Substitution.
4. Permutation--rearrangements, or rearrangements with substitutions. E.g., in the morning first thing → first thing in the morning.
5. Distribution--material in one text segment is passed into more than one segment. E.g., A week later I had a dreaded appointment → an appointment that I dreaded.
6. Consolidation--material in two or more text segments is collected into one segment. E.g., We showed the parrot things. It started to learn. → We started to train the parrot.

These six operations were not, however, used in the statistical analysis.

Purpose of the Study

The present study was designed to explore three suggestions derived from the scanty information available in the literature, namely: that the ability to revise effectively is developmental; that revising behaviours may differ with ability; and that willingness to revise may be related to involvement in the topic. The study involved the analysis of revisions made by good and average students in grades 5, 7, and 11 in two types of writing, expressive writing and persuasive writing.

It was thought that differences between the two types of writing might derive from at least two factors: a tendency for students to revise more when they are deeply involved in the writing (Emig, 1971); and the fact that persuasive or argumentative writing makes heavier cognitive demands on students than narrative or expressive writing (Moffet, 1968; Scardamalia, 1981). As to the first factor, it was anticipated that students would be more involved in recounting a significant personal experience (the expressive assignment) than in writing a persuasive piece. Since it has been found (Aviva Freedman, Carleton University, personal conversation) that students in Ontario made more spelling and mechanical errors in argumentative writing than they did in narration, it seemed possible that if more such errors were made in argument, there would be more scope for corrections of this particular type.

The specific questions examined, then, were:

a. Are there differences between grades in the amount of revision and in the kinds of revision?

b. Are there differences in the amount and kinds of revision done in expressive versus persuasive writing?

c. Are there differences, within each grade and across the three grades, in the amount and kinds of revision done by good students versus average students?

d. Are there differences between grades and between ability levels in the amount and kinds of revision done during composing

versus after completion of the first draft?

Method

Subjects

Subjects were from one high school and six elementary schools in Richmond, British Columbia. Richmond is a municipality within the Greater Vancouver area with a population of some 40,000 which includes both working class and middle class families. Expressive and persuasive assignments were administered to students in six eleventh-grade classes in one high school, six seventh-grade classes in three elementary schools, and to four fifth-grade classes in five elementary schools. Complete sets of drafts and revisions were received from seventy-one eleventh graders, one hundred and four seventh graders, and eighty-six fifth graders. The final drafts of each of the two assignments were quality-rated on a four point scale--1 for the poorest and 4 for the best--by four experienced teachers at each grade level. The highest total quality score that a student could receive was thirty-two--sixteen for each of the two essays--while the lowest possible total was eight. The range of quality scores received was 10 to 32 for grade 11, 8 to 31 for grade 7, and 11 to 31 for grade 5. The fifteen students receiving the highest total scores were designated the good group at each grade level; however, students were not selected for the good group unless both compositions were better than average. The range of total scores received by those selected as good was

25 to 32 at grade 11, 24 to 31 at grade 7, and 25 to 31 at grade 5. Fifteen students were randomly selected from the remainder of students at each grade level. These students were designated as the average group.

The Writing Assignments

The expressive writing assignment called on students to describe a memorable personal experience:

> All of us have had unforgettable experiences, experiences that we remember for years. It may have been something sad that happened, or something funny, or something embarrassing, or something that made us feel very proud and happy.
>
> Think of an unforgettable experience that you have had. Describe what happened and how you felt so that your teacher will understand why you remember so clearly.
>
> Try to write at least one page.

The persuasive assignment was one which had been used successfully with grades 6, 10, and 12 in previous studies (Crowhurst & Piche, 1979; Crowhurst, 1980). The assignment was based on a 35 mm. colour slide which showed an elementary classroom with a boy about to let fly with a rubber band. The assignment was worded as follows:

> Imagine that this is your class. This incident occurred while a substitute teacher was teaching. You are a member of a committee chosen by the class to decide on punishments for students who break the rules of the class. Your teacher is also on the committee.
>
> Decide what you think should happen to the boy in the picture. Your task is to try to convince your teacher that your opinion is right. Describe the punishment and give all the reasons you can think of for giving that punishment.
>
> Try to write at least one page.

Writing Sessions

The writing sessions were conducted by the regular classroom teachers following directions prepared by the researcher and discussed in full with teachers beforehand. The order of the four writing sessions was as follows: first draft of the persuasive assignment; revision and final draft of the persuasive assignment; first draft of the expressive assignment; revision and final draft of the expressive assignment. The writing sessions took place during the month of February. Revision sessions occurred on either the third or the fourth day after the writing of the first draft. The teacher explained that the writing was "for someone outside the school who is interested in how fifth (seventh, eleventh) graders write." On the first and third days, teachers distributed double sheets of lined paper and copies of the printed assignment sheet. They told students to write on alternate lines of alternate pages of the double sheet of paper provided--this to allow students plenty of space to revise if they should wish to do so. They told students that they could make changes by crossing out neatly, but that they must not erase or white out. They explained that students would have a chance to revise and edit on another day. They allowed forty minutes for writing, and collected compositions and assignment sheets at the end of the period.

In the second and fourth sessions, the teachers distributed: the draft which had been written in the previous session; an

extra double sheet of lined paper which students placed around their first draft in order to allow plenty of room for revisions; an extra sheet of lined paper for the final copy; and a green pen with which all writing was to be done. Students were told to make any changes which they thought would improve their first draft, using the blank pages in their booklets if they wished to. They were then to write their final draft on the single sheet of paper. They were reminded not to erase or white out.

Scoring

Revisions were identified and classified by two trained student assistants. After training, they achieved a percentage agreement of 78.7 on ten percent of the papers, selected randomly from each grade level for final reliability checks. Those papers which were not part of the reliability sample, and which were, hence, scored by only one scorer, were later checked by the second scorer to detect, in particular, omissions, which accounted for a significant number of disagreements.

After scoring, it was discovered that one student at each grade level, a good student in grade 7, and an average student in each of grades 5 and 11, had made text level changes in either one or both compositions, that is to say, had rewritten the composition completely on the second day, producing a composition so different that changes could not sensibly be counted and compared with the usual kinds of revisions. The three students were, therefore, discarded as subjects. In order to equalize the

number of subjects in grade by ability cells, the good student with the lowest quality score was discarded from each of grades 5 and 11, and one average student, selected randomly, was discarded from the average students in grade 7. Thus the total number of subjects at each grade level was 28, (fourteen good and fourteen average).

Revisions were categorized by level and by occasion. The six levels of revision were: Formal, Word, Phrase, Clause, Sentence, and Multi-sentence. Occasion 1 revisions were made in blue ink during the writing of the first draft on day 1. Occasion 2 revisions were those revisions which were made on day 2, recognizable because they were made in green ink. Revisions were categorized according to occasion because researchers have reported a tendency for poor writers to engage in excessive and detrimental revising during the process of composing (Perl, 1979; Bridwell, 1980). Occasion 1 revisions would permit examination of this question.

The number of revisions made at each level on Occasion 1, and the number of revisions made at each level on Occasion 2 was recorded for each of the two compositions. The number of words in each of the first and the final drafts was recorded. The number of revisions per hundred words was calculated for Occasion 1 and for Occasion 2 for each composition by dividing the number of revisions at each of the six levels by the number of words in the first draft and multiplying by 100. Thus, the following

scores were obtained for Occasion 1 and Occasion 2 for each of the two compositions:

1. The number of formal revisions per 100 words.
2. The number of word-level revisions per 100 words.
3. The number of phrase-level revisions per 100 words.
4. The number of clause-level revisions per 100 words.
5. The number of sentence-level revisions per 100 words.
6 The number of multi-sentence-level revisions per 100 words.

Analysis

Two separate analyses of variance were performed using the ANOVAR program of The Statistical Package for the Social Sciences Version 9.00. The first analysis was a 3(Grade Level) x 2 (Ability Level) x 2 (Composition Type) x 2 (Draft) mixed design with repeated measures on the third and fourth factors. The dependent variable was the number of words written in each of drafts 1 and 2 for each of the two compositions (expressive and persuasive).

The second analysis was a 3 (Grade level) x 2 (Ability Level) x 2 (Composition Type) x 2 (Occasion) x 6 (Revision Level) mixed design with repeated measures on the third, fourth and fifth factors. The final variable was the dependent variable. It consisted of scores for each of: Formal revisions per 100 words; Word-level revisions per 100 words; Phrase-level revisions per 100 words; Clause-level revisions per 100 words; Sentence-level revisions per 100 words; Multi-sentence-level

revisions per 100 words.

Results

Composition Length

Predictably, there were significant main effects for both grade, $F(2;78)=20.30$, $p<.001$, and quality, $F(1;78)=32.14$, $p<.001$, on composition length. Results of the Bonferroni *t* test revealed that significantly longer compositions were written by eleventh graders than by seventh graders, and by seventh graders than by fifth graders, the mean number of words per composition being 241, 190, and 156 for grades 11, 7, and 5, respectively. Significantly longer compositions were written by the good group than by the average group.

Mode exerted a significant main effect on composition length, $F(1;78)=18.94$, $p<.001$. Compositions were significantly longer in the mode of expressive writing than in persuasive writing. This finding was consonant with finding in a number of studies which have found that students at a variety of grade levels write longer compositions when writing narrative that when writing persuasive discourse (Crowhurst and Piche, 1979; Hidi and Hildyard, 1981).

There was, however, a significant two-way interaction between mode and grade, $F(2;78)=9.249$, $p<.001$. The Newman-Keuls test revealed that the difference between modes was significant only for grades 7 and 11 ($p<.05$). At the grade 5 level, there was no significant difference between the number of words written

in expressive writing and the number of words written in persuasive writing. The absence of a difference in length between expressive and persuasive writing at the grade 5 level is to be explained by the fact that many of the grade five students wrote, either partially or completely in the narrative mode in response to the argument assignment; narrative, as noted above, regularly produces longer compositions than persuasive writing.

Overall, there was no significant difference between the number of words written in draft 1 and the number of words written in draft 2. However, there was a significant grade by draft interaction, $F(2;78)=3.469$, $p<.05$. The Newman-Keuls test revealed that there was a difference in the length of drafts only at the grade 5 level, where the second draft was significantly shorter than the first draft ($p<.05$).

Revision Totals

There were no students who made no revisions. The range for revisions per 100 words was large for each grade level and for each quality group within grades indicating considerable variation among individuals in the perceived need for revisions, and/or in willingness to revise. Means and ranges for the total number of revisions per 100 words for each grade by quality cell are shown in Table 1.

TABLE 1

Means, Minimums, and Maximums for Total Number of Revisions per 100 Words for Grade by Ability Cells

		Mean	Minimum	Maximum
Grade 5	Good	16.84	9.16	29.23
	Average	16.48	7.10	26.18
Grade 7	Good	13.12	4.24	23.33
	Average	12.05	6.71	20.79
Grade 11	Good	16.76	7.84	28.38
	Average	13.14	2.62	31.11
All	Good	15.56	4.24	29.23
	Average	13.88	2.62	31.11

Grade Differences

There was a significant main effect for grade on the total number of revisions, $F(2;78)=3.091$, $p<.05$. The Bonferroni t test revealed that grade 7 students made significantly fewer revisions than grade 5 students. Grade 7 students made fewer revisions than grade 11 students, also, but the difference was not significant.

There were significant differences among levels, $F(5;390)=124.808$, $p<.001$. The Bonferroni t test revealed that there were significantly more revisions at the formal and word levels than at the phrase, clause, sentence, and multi-sentence levels. There was a significant grade by level interaction, $F(10;390)=2.731$, $p<.01$. The Bonferroni t test revealed that grade 11 students made significantly fewer formal revisions than grade 5 students. Grade 11 students made significantly fewer formal revisions that word-level revisions whereas at grades 5 and 7, students made more formal revisions than word-level revisions. Means for each grade for each of the six levels of revision are presented in Table 2. Grade 7 students made fewer revisions than both grade 5 and grade 11 students at the word-, phrase-, and clause-levels; they made fewer revisions than grade 5 only at the formal and multi-sentence levels.

The grades were similar in their proportionate use of revisions of various kinds. For all three grade levels, the number of revisions was in descending order of magnitude for word

level, phrase level, clause level, sentence level, multi-sentence level. The only difference between the grades in their proportionate use of the various levels of revisions was, as noted above, that grade 11 had fewer formal revisions than word-level revisions, whereas for grades 5 and 7, the number of formal revisions was greater than the number of word-level revisions. Grade 11 made nearly twice as many sentence-level revisions as grade 5; however, the number of such revisions was small even at grade 11, and difference between grades was not significant.

Ability Levels

There was no significant difference between the number of revisions made by good students and the number of revisions made by average students. The good group made more revisions than the average group (15.6 versus 13.9) per 100 words, and the larger number of revisions occurred in levels other than the formal level. However, the difference was not significant. The trend for the good students to make more revisions at levels other than formal was most noticeable at grade 11, there being virtually no difference at grades 5 and 7. Means for grade by ability cells for each level of revision are shown in Table 2.

Composition Types

There were no significant differences between the two types of compositions in the number of revisions made. Students were no more likely to revise in one composition than in the other.

TABLE 2

Mean Number of Revisions per 100 Words for Six Revision Levels in Grade by Ability Cells and for Bridwell's Grade 12 Subjects

GRADE	ABILITY	LEVEL					
		Formal	Word	Phrase	Clause	Sentence	Multi-Sentence
5	Gd.	5.21	5.51	2.72	2.15	0.53	0.71
	Av.	6.09	4.50	2.68	2.24	0.60	0.37
	Both	5.65	5.01	2.70	2.19	0.57	0.54
7	Gd.	4.67	3.86	1.95	1.74	0.64	0.25
	Av.	3.75	4.00	2.17	1.17	0.63	0.33
	Both	4.21	3.93	2.06	1.45	0.63	0.29
11	Gd.	3.61	5.75	3.50	2.54	1.04	0.33
	Av.	4.01	4.42	2.55	0.88	1.02	0.26
	Both	3.81	5.08	3.03	1.71	1.03	0.29
All	Gd.	4.49	5.04	2.72	2.14	0.74	0.43
	Av.	4.62	4.30	2.45	1.43	0.75	0.32
	Both	4.55	4.67	2.59	1.79	0.75	0.37
12 (Bridwell)		4.09	5.26	3.04	1.01	1.30	2.13

Neither were there differences between expressive and persuasive writing in the proportionate use of the various levels of revision.

Revision Occasions

Predictably, there was a main effect for occasion, $F(1;78)=257.079$, $p<.001$. Significantly more revisions were made on occasion 2 (day 2) than on occasion 1 (day 1). There was a significant level by occasion interaction, $F(5;390)=63.099$, $p<.001$. On day 1, revisions were most likely to be at the word level, followed by the formal level, whereas on day 2, revisions were equally likely to be either formal or word-level revisions.

Inspection of the means in grade by ability by level by occasion cells revealed that younger students and average students made more formal revisions on day 1 than did older students and good students, the highest number being made by average grade 5 students.

Discussion

The results of this study provide very slender evidence for the notion that there are developmental differences in the tendency to revise. The only predictable, age-related difference was for formal revisions to decrease with age, doubtless reflecting increasing competence with age in such matters as spelling, punctuation, and subject-verb agreement.

A difference that would not have been predicted was that seventh graders made the smallest number of revisions,

significantly fewer than fifth graders. That they made fewer formal revisions than fifth graders is attributable to developing skill in such matters as spelling, punctuation, subject-verb agreement, et cetera. However, there is no apparent explanation for fewer revisions at word, phrase, and clause levels.

The largest number of revisions was made by grade 5. However, if formal revisions are excluded--a category in which fifth graders made a large number of revisions--the number of revisions per 100 words at other levels is very close to the number made by grade 11 students. These results suggest that differences between young students and older students, if they exist, will not be detected by tallying the number of revisions made at the various levels --excepting only formal revisions.

There is only slight evidence to support the hypothesis that, over all three grades, better writers make different kinds or a different quantity of revisions from average writers, in so far as "kinds of revisions" means revisions at the various syntactic levels explored in this study. There was an overall tendency for average students to make more formal revisions than good students--a tendency which is in the direction that might have been predicted from studies which report a preoccupation by poor students with mechanics such as spelling and punctuation (Bridwell, 1980; Perl, 1979). However, the average seventh-grade students had fewer formal revisions than the good seventh-grade students--a result which is quite the opposite of the results for

fifth and eleventh graders. Again, there is no readily apparent explanation for this finding.

For other than formal revisions, there was a tendency towards a difference between good and average students only at grade 11. Good students made more revisions than average students in every category other than formal. This trend is consonant with findings such as that of Sommers (1980) that more experienced writers made more revisions involving units larger than the word.

The large number of formal revisions made on day 1 by grade 5 students and by average students at all grade levels, is consonant with findings from other studies that less skilled writers tend to be preoccupied with surface level editing (e.g., Perl, 1979; Bridwell, 1980). However, even average grade 5 students, who made most formal revisions on day 1, made only an average of 1.19 per 100 words. There seemed to be no case of a student so preoccupied with error correction on day 1 that it interfered with composing, as Perl reported for her unskilled college freshmen.

A finding to be noted is the high variability for revision scores for students at all grade and ability levels as illustrated in the large differences between the maximum and minimum scores for each grade by ability group. (See Table 1.) Among the best and the worst students at each of the three grades, there were students who made many revisions and students

who made very few. In general, such variability decreases the liklihood of finding statistically significant differences.

Similar findings of great variability have been found in other studies. Bridwell, for example, found that the ten most extensively revised papers among her sample received quality ratings that ranged from the top to the bottom of the scale. And one of her highly-rated subjects made almost no revisions, though the general tendency was for the least extensively revised papers to receive lower quality ratings. Faigley and Witte (1981) also noted "extreme diversity in the ways expert writers revise (p. 410), and warn against oversimplifying interpretation of their results: "Our results . . . should not be viewed as a mandate to demand that inexperienced writers revise more."

Conclusions and Implications

Contrary to Bridwell's suggestion that there seem to be developmental differences in both the tendency to revise and the ability to revise successfully (1980, p. 218), the results of the present study provide little evidence for the notion that there are age-related or ability-related differences in the quantity of revisions at the various syntactic levels examined. There was a significant decrease in the number of formal revisions from grade 5 to grade 11. Otherwise, the numbers and kinds of revisions made by grade 5 students were similar to those made by grade 11, with grade 7, inexplicably, below both.

There were no significant differences between good and average students. Only at grade 11 was there a tendency for good students to make fewer formal revisions and more revisions of other kinds than was the case for average students.

There was high variability in revision behaviours, with both good and average students at every grade level who revised a lot, and good and average students who revised little. As was the case in other studies, most revisions were either formal revisions or word-level revisions.

Since many experienced writers stress the importance of revising in the writing process, teachers should explain the function of revision in the composing process, and should provide opportunity for students to revise from the earliest attempts at composing. However, it is to be noted that there are wide variations in writing style and in the tendency to revise--even for professional writers. It is further to be noted that, in the lower grades especially, there appears to be little relationship between the number and kinds of revisions and writing ability. Students, then, should be helped to see how revising may improve a piece of writing, but should not be encouraged to revise simply for the sake of revising.

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